

## DISPLAY WINDOW APERTURE ADVERTISING MEDIUM

### TECHNICAL FIELD

This invention relates to projected image display systems applicable for example for outdoor advertising. In particular, the invention provides a new advertising medium which provides a substitute for billboard and signboard advertising displays. More generally, the invention provides a novel indoor projection system in which a building display window defines the projection system display aperture for viewing from outside the building.

### BACKGROUND ART

A variety of billboard and signboard systems are available for daytime and nighttime outdoor advertising. The McGee U.S. Pat. No. 3,198,066 and the Joss U.S. Pat. No. 2,491,184 describe outdoor advertising billboards convertible to projection screens for nighttime advertising messages. These patent references describe the use of front screen projection on the billboard for moving displays or for changing the displays periodically. The billboards are designed for traditional daytime billboard displays and nighttime use with a screen. A timing mechanism is provided for this purpose. The Cordill et al. U.S. Pat. No. 1,740,499, the Gould U.S. Pat. No. 1,644,580, and the Pierson U.S. Pat. No. 3,069,970 describe billboard and signboard arrangements with rear screen projection for providing animation and for changing the billboard displays.

Each of the foregoing patent references and existing billboard and signboard systems, however, contemplate traditional outdoor advertising billboards, signboards, and related equipment. A disadvantage of such advertising systems is that billboard and signboard advertising has been outlawed in many states along with off-premise advertising signs and billboards generally. No successful advertising medium has been devised as a substitute for such traditional billboard and signboard location advertising.

### OBJECTS OF THE INVENTION

It is, therefore, an object of the present invention to provide a new advertising medium for outdoor advertising on a signboard or billboard scale.

Another object of the invention is to provide an image display system for effective outdoor advertising or other image display in which all image and sign display equipment are located inside of a building.

A further object of the invention is to provide a projected image display system applicable for outdoor advertising and other outdoor image display purposes in which the projected image or advertising message may be readily sequentially or periodically changed without the difficulties and expense associated with altering and changing signboard and billboard signs.

### DISCLOSURE OF THE INVENTION

In order to accomplish these results the present invention provides a new projection system for projecting and displaying images on a billboard or signboard scale for viewing in which a building display window defines the display aperture or viewing aperture of the projection system for viewing projected images from outside the building. A feature and advantage of this arrangement is that all elements of the new advertising

medium and image display system may be positioned on the protected side or inside of the projection system display aperture which forms part of the protective enclosure of the building.

According to the invention, a deployable and retractable rear projection screen, having a size area for substantially covering the display window aperture, is positioned for deployment in the display aperture adjacent to the display window. The rear projection screen is constructed and arranged for deployment in the display aperture adjacent to the display window and for retraction from the display aperture away from the display window so that the display window is unobstructed when the screen is retracted. A screen motor is operatively coupled to the screen for deployment and retraction of the screen.

Associated with, and operatively coupled to, the screen motor is a first timer such as a clock synchronized timer which is adjusted for generating a first timing signal to actuate the screen motor and deploy the screen at a selected first time of day after daylight hours, for example, at sunset or in the evening. The first timer is also adjusted for generating a second timing signal to actuate the screen motor for retracting the screen at a selected second time of day, for example, prior to daylight hours of the next day. By this arrangement the display window functions as the display aperture or viewing aperture of the projection system for viewing images from outside the building during selected evening or nighttime hours. On the other hand, during daylight hours the display window functions as a building display window without substantial obstruction or obscuring by the retracted screen. Upon deployment of the screen, the first timing signal also turns on an image projector.

The image projector is preferably a slide transparency projector operatively positioned inside the building for projecting still images along an optical path onto the rear projection screen when the screen is deployed in the display aperture. The slide transparency projector, or other image projector, is constructed and arranged for sequentially projecting a plurality of still images.

According to the invention a second timer, such as a solid state delay-on-break timer, is operatively coupled to the slide projector and is adjustable for generating sequential timing signals for advancing the slide projector for projection of sequential still images during selected time intervals. The time intervals are selected to be of sufficient duration to preclude objectionable or distracting motion effects to viewers outside the building. Many states prohibit elements of motion on signs along a roadway and time intervals of adequate duration must be selected to comply with such state laws. The second timer is actuated into operation by the first timer and first timing signal when the screen is deployed and the slide projector is turned on.

Upon completion of a sequence of advertising messages or other still images during the desired period of evening or nighttime hours, the second timing signal of the first timer turns off the slide projector and second timer and initiates the screen motor for retracting the screen. The slide projector fan remains on for a cooling period to extend bulb life.

In the preferred embodiment the projection screen is stored in the configuration of a roll, for example, in a canister at an edge of the display window. The screen